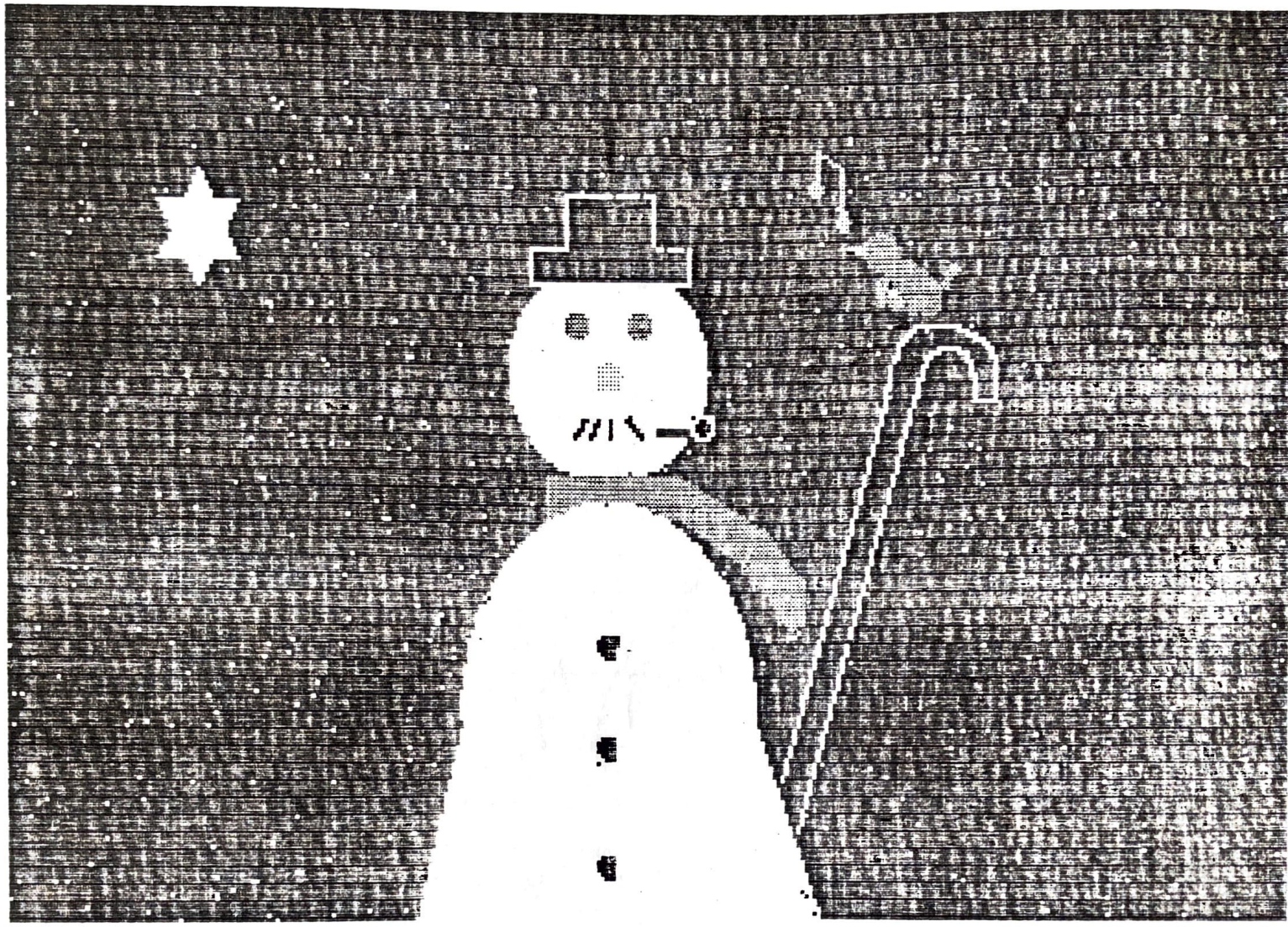
ABUG
ACORN & BBC
microcomputers
USER GROUP
Sheffield

please reply to:-



A.B.U.G. NEWSLETTER No.12

January 25th 1984

Contents:

Diary

Meetings to the end of May 1984

February 8th	(Farfields)	Social
February 22nd	(Park Baths)	Workshop & 'Bring & Buy'
March 7th	(Farfields)	Social
March 21st	(Park Baths)	Communications
April 4th	(Farfields)	Social
April 18th	(Park Baths)	Guest speaker
May 2nd	(Farfields)	Social
May 16th	(Park Baths)	Annual General Meeting & Buggy demonstration by Economatics

Unfortunately, the date of this month's meeting had to be changed and Economatics were not available for the revised date. However, the demonstration has now been re-arranged for the May meeting.

With all the hardware extras and software now available for the Beeb, it was felt that a 'bring and buy' evening might be a popular activity and so the February meeting will be such an event. If you have any appropriate items to dispose of, then bring them along but all items must be originals.

Last year's chairman, Steve White (now working for Acorn), is giving demonstrations of the second processor for the Beeb throughout his sales area and we are trying to arrange a demonstration for a club meeting. We will give details when we have a firm arrangement.

The christmas competition unfortunately didn't attract too many entries (in fact only one) which must imply rather too much modesty from many members. Nonetheless, the entry we did receive was of a very high standard and the £10 prize given to Chris Bramwell was well-deserved. If anyone wants a copy of the winning program it is available from Chris. We might try this again sometime, with more notice, and we hope to get a better response.

We thank Ian Brown for this month's front page picture. If anyone has a suitable design for future issues please submit them as a disc or tape copy of mode 1 screen memory.

Finally, please remember that the times for each meeting are 7.30 to 9.30 p.m.. Members should adhere to these times, particularly at the Park Baths venue where the room booking is at an hourly rate.

Subscriptions

Members are reminded that this year's subsciption is due tonight. The standard rate remains at £8 for the year, Junior members £4, and we are introducing a family membership of £10. It would be appreciated if members could pay as soon as possible as the club relies on these contributions to pay all expenses.

Discs

We have discovered a good source of high quality 5 1/4" discs at a very competitive price.

40 track (48 TPI) single sided discs are £13.50 per box or £1.50 each, and 80 track (96 TPI) double sided discs are £21 per box or £2.50 each. We're sorry we have to charge extra for single discs but this is to cover the inevitable wastage involved in handling opened boxes over a period of time. These will be available to all members at every meeting from John Morrell or any of the other committee members.

Wordwise Tips

One very minor, but potentially catastrophic bug is that when 'PRESS ANY KEY' is displayed this does not include the BREAK key. Pressing this key invariably corrupts the text and often leads to irrevocable crashes.
The following warning has been submitted by Mike Robinson.

Editing Basic Programs with Wordwise

Beware if the program contains invisible control codes (as produced by the SHIFT/function keys) to give coloured text in the listing. These codes seem to confuse the Wordwise system for inserting markers when deleting,moving and copying marked sections of text. The results are unpredictable. For example: when deleting, very short sections are often dealt with correctly but anything longer generally causes a section of the program up to the next control code to be deleted. The inserted markers are ignored and indeed remain after the deletion even though Wordwise will take it that the markers are no longer there.

This is a most annoying bug, as if you have been extensively editing a program you can suddenly find you have lost a large section of the text. You are effectively denied the use of one of the most useful facilities offered by Wordwise.

Sound Designer and Tune Composer Programs

Over the past few months I've been developing a pair of programs for the BBC computer. The first, called SOUND DESIGNER, provides an easy way of designing sound envelopes. Up to 16 envelopes may be defined and displayed graphically and there are facilities for experimenting with multiple sounds. The SOUND and ENVELOPE statements may be listed, output to a printer, or copied into another program.

The companion program called TUNE COMPOSER allows music to be scored. It is very easy to use as notes are entered individually and no knowledge of music is required. Envelopes from SOUND DESIGNER may be used and all four channels may be utilised.

If any members of ABUG would like a copy of the programs for appraisal, I would welcome any constructive critical comment. I have in mind submitting these programs to a number of software houses and I would appreciate any advice regarding marketing my programs.

Mike Robinson

RAM/ROM Extension Boards

Since our article in the October newsletter, even more ROM boards have become available, and an even more interesting development is the appearance of RAM boards. These provide extra RAM, addressable in the region of memory usually occupied by BASIC or other sideways ROMS. Virtually all the ROM extension boards provide this facility, but require the use of very expensive static RAM (currently around £70 for 16K). The RAM extension boards now appearing make use of the considerably cheaper dynamic RAM and provide a board complete with 16K of RAM for around £40.
The main advantage of these boards is that the normally ROM-based software is held on disc (or tape), and downloaded into the RAM as required. This seems to overcome all

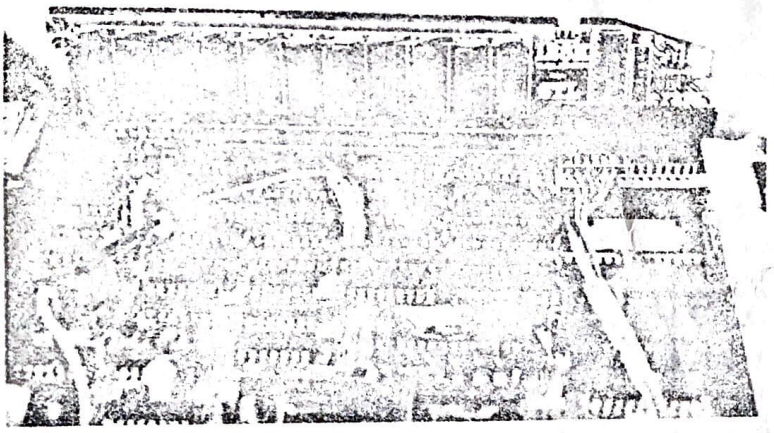
the problems of over-heating and strain on the power supply associated with having up to 16 power-hungry EPROMS inside the Beeb. In addition, it is easier to develop your own ROM-based software and test it in-situ without the need to continually re-blow an EPROM. Market leaders in the RAM board field at present are Solidisk who produce a range of boards with from 16 to 128K of RAM. These also offer the advantage that the disc system can be run from &E00 as when using cassette, using software provided with the board. This overcomes the perennial headache of trying to transfer cassette based programs to run on disc, and prevents the proliferation of small downloader routines which rapidly use up the 31 files allowed by the Acorn DFS. The only disadvantages that we can see at the moment are that the system is essentially disc-based (although it will work with tape) and that programs which rely on accessing utilities from several ROMs would require very cumbersome programming.
Several members are already interested in these boards and Solidisk have offered a substantial discount for a bulk order. We consider that this is one of the main advantages of a user group like ours and anyone who is interested in taking advantage of this offer should see John Morrell as soon as possible (we would like to place a firm order by the end of January).
The Solidisk fact sheet which we received is attached at the back of this newsletter which gives full technical information and is worth careful reading.

Graphics Extension ROM

We had a demonstration of this latest piece of firmware from Computer Concepts. At first sight it seems a strange mix of facilities, covering three apparently unrelated areas; sprite generation, LOGO graphics, general graphics utilities. However even a limited use of the program shows it to be the most significant addition to the Beeb's graphics commands so far. The speed and quality of all the features are very high and the sprites are particularly impressive, approaching the hardware implemented sprites on computers such as Atari and Texas. Almost as an afterthought, mode 8 has been implemented giving 16 colours using only 10K of memory. All this has been crammed into an 8K ROM, accompanied by a thorough and well produced manual. The only extra feature which could have usefully been included is a graphics screen dump. We would recommend anyone with even a passing interest in graphics to have a closer look at this package.

SOLIDISK FACT SHEET — BBC SIDEWAYS RAM

SWR16 £39.65 SWR32 £54.95 Solidisk £I39.95
A charge of £I per order to cover postage & packing.



PRELIMINARY:

The sideways RAM system consists of:
a) A cartridge base which provides easy access to the computer address, data and control busses.
b) A mini ROM cartridge which accommodates and protects any ROM from being damaged through handling.
c) A Sideways Ram card which conveniently replaces any ROM.
d) A Solidisk Extension card which is basically more Sideways Rams (optional).
e) A SWR system disc which contains utility programs such as ROMCOPY, STLDISC and a few demonstration programs.*

*The supplied disc is formatted as single density, 40 tracks to Acorn's DFS specifications.
A certain number of control wires are to be connected to the computer board but no soldering is required.

INSTALLATION:

The installation of the Sideways Ram system is quite simple and can be done in a few minutes. Basically, you install first the base unit into the rightmost sideways ROM socket on the computer, connect the control wires and plug in either the Mini ROM cartridge or the sideways RAM card.

TRANSFERING SOFTWARE FROM THE MINI ROM CARTRIDGE:

The utility disc contains a useful program for this. Simply enter: CHAIN "ROMCOPY" and give a suitable name to the software in the mini ROM cartridge.

TRANSFERING ROM SOFTWARE WHICH IS ALREADY IN SIDEWAYS SOCKETS:

Simply CHAIN "COPY2" instead.

LOADING BACK ROM SOFTWARE FROM DISC OR TAPE:

Simply enter *LOAD PROG-NAME as it has been previously saved with ROMCOPY or COPY2.
Press the BREAK key once.
You can evoke the loaded software in the usual way such as *WORD, *BEEBCALC, *BCPL etc.
Alternatively, the sideways RAM can be loaded and initialised by a !BOOT file. For example, enter:

```
*BUILD !BOOT
 1—*LOAD BCPL
 2—*FX142,15
```

(Press ESCAPE and enter *OPT 4,3 (EXEC))
The system call *FX142 will initialise any language found on the specified ROM. The sideways RAM identity number is always 15.

THE SWR32: 32K OF RAM IN THE SIDEWAYS SYSTEM:

The SWR32 is equivalent to 2 sideways RAMs, numbered 14 and 15. You can *LOAD 2 different sideways software modules into the SWR32.
For example:
Enter: *LOAD B.CALC
Then enter: ?&FE62=15: ?&FE60=14: *LOAD W.WISE
You now have at least 3 languages on your computer.
Similarly, if you have the SOLIDISK EXTENSION, banks numbered 8 to 15 are all in RAMs. You can effectively set up a !BOOT file like this:

```
1 ?&FE62=15: ?&FE60=8: *LOAD W.WISE
2 ?&FE60=9: *LOAD B.CALC
3 ?&FE60=10: *LOAD VIEW
4 ?&FE60=11: *LOAD FORTH
5 ?&FE60=12: *LOAD EXMON
6 ?&FE60=13: *LOAD D.DOCTOR
7 ?&FE60=14: *LOAD BCPL
8 ?&FE60=15: *LOAD PASCAL
```

etc.
The previous example shows the use of &FE60 to WRITE-ENABLE different Ram banks. The more observant will notice that although P83 is implied in the POKED values, it is not effectively wired to the VIA. This has no practical significance and ?&FE60=1 will have the same effect as ?&FE60=9.

SWR1 and SWR2 DEMONSTRATION PROGRAMS:

These programs illustrate the working principle of the sideways RAM. In the first example, we show how the location &FE30 is used to select any sideways ROM number. In the second example, we show how to call assembly routines held in sideways RAM from Basic and how sideways RAM is used to store a high res graphics picture.
The working principle of the sideways RAM is simple enough: when the processor wants to read a location inside the sideways space, the R/W signal goes high. The value held by location &FE30 will be used to select the ROM ID number (read only memory identity number). When the processor wants to write to a location in the sideways space, the value held by location &FE60 will be used to select the RAM ID number (Random Access memory identity number). The cartridge base contains an IC whose function is to send to S20 and S22 the value held in either &FE30 or &FE60. If only 16K are available on your SWR system, there is only one identity number (15). The value in location &FE60 is assumed to be 15. There is no need to connect WRITE ENABLE control wires for this. Hence the reduced number of wires in the simple cartridge base.
When Basic assembles machine code or Disk Filing System loads a program into the Sideways area, the processor reads the Basic ROM (ROM ID active), stores the data in the WRITE-ENABLED bank (RAM-ID active) and the switching is fully automatic by the R/W signal. The apparent result is that you can assemble directly into Sideways Ram when P% is set to &8000 — &BFFF or load programs into Sideways Ram, etc. Saving a program stored in sideways Ram is no more complicated using "ROMCOPY" since the sideways RAM behaves exactly like the mini cartridge.
If you have 32K or more, sideways Ram contents should be saved by blocks of 16K, using "COPY2" starting with ID number 15 for the top one, the 14, 13 and so on. Make a comparison between the cartridge base with a sorting office: it knows where to send the message.
The power of the sideways RAM system is not limited to running ROM software. To our knowledge, there are quite a few software originators working on compilers, filing systems etc. . . . using the sideways RAM for overlay. The overlay technique consists of loading the same RAM area with different program modules. Each performs a specific task and once finished, the module will be replaced by the next one.
The SWR system disk contains 2 valuable programs using this technique. Although the programs are copyrighted by our company, please feel free to alter the source code to add to it your own writing as far as it remains in your personal use. We would greatly appreciate any benevolent contributions and would reward any substantial improvement with free hardware gifts.

USING THE STLOEOO PROGRAM:

This program copies ACORN'S 0.90 DFS into SWR bank 15, and modifies it so that no user RAM is taken by the Disk Filing System. To run it, simply type in CH."STLOEOO". The computer will reply with 'PAGE=&OEOO NOW'.
You now have an extra 2 and three quarter K for your programs and still access to your DISKS. If you press BREAK, simply type OLD and nothing will have changed.
Enter:
PRINT PAGE -
The correct answer should be:
3584
Otherwise, you do not have the ACORN's DFS release 0.90.
You will have to wait until we finish our own DFS for a free copy or buy the 0.90 chip.
It is possible to save the overlaid 0.90DFS+STLOEOO with 'ROMCOPY' program or more simply with:
*SAVE DFSOEOO 8000 9FFF
Then *LOAD DFSOEOO as any sideways software.
Press BREAK key to initialise the DFSOEOO.
All other language type ROMs you have installed in your computer will also have at least 2 and three quarter K for use.
If you have the 32K SWR or 128K board and wish to load a language from disk with STLOEOO, having been executed you need to do the following steps:— (to load and run VIEW from bank 14)
*DISC or *DISK
?&FE62=15: ?&FE60=14: *LOAD VIEW

When it has finished loading, simply press CTRL&BREAK and you are running VIEW with an extra 2 and three quarter K. To switch between the two disk filing systems *SDFS is for the DFS+STLOEOO and *DISC or *DISK is for ACORN's 0.90.
NB: If you have done a *DISC and then press BREAK, because DFS+STLOEOO has priority over DFS you will have changed DFS back to DFS+STLOEOO as if you had typed *SDFS.
It is not possible to get the DFSOEOO to run in any other sideways Ram bank than bank 15 as the ram bank must be write-enabled all the time.

USING THE STLDISC PROGRAM:

The STLDISC program should not be used with the STLOEOO and will work with ACORN's DFS release 0.90.
The STL disk will create and maintain a silicon disk in addition to the physical drive on your system. Any valid commands will work with both drives, including additional commands to those of ACORN's DFS. The STL disk program will only work if you have the the Solidisk extension.
To use the STLOEOO program, enter:
CHAIN "STLOEOO"
2 error messages may be reported: STLDISC ERROR 1 means that no solidisk extension is fitted or PB0-PB1 and PB2 are disconnected.
STLDISC ERROR 2 means that you do not have ACORN'S 0.90 DFS on your system.
The computer will display:
BBC 32k computer
ACORN DFS
100K AVAILABLE AS DRIVE 1
BASIC

If you do not have the correct DFS, you will have to wait until we finish our own DFS to receive a free copy or buy the 0.90 chip. It is possible to save 0.90 DFS+STLDISC resides in bank 8) or simply:
*SAVE S.DISC 8000 AFFF
To load S.DISC:
?&FE62=15: ?&FE60=8: *LOAD S. DISC
Press BREAK.

The STLDISC program transforms the 7 sideways RAMs 8 to 14 into a silicon disc. The use of memory is as follows:
BANK 8: contains DFS+STLDISC, CRC bytes and sectors 0 to 15.
BANKS: 9 to 14: contain sectors 16 to 399.
BANK 15: free for sideways software.
It is possible to run any language available for the BBC micro with the Solidisk.
The STLDISC will address the physical drive as drive 0 and the silicon drive as drive 1. The initial drive is either 0 or 1 and can be reset using *DRIVE 0 or *DRIVE 1. Shift-Break sequence will boot from the current drive. If you have 2 or more physical drives on your system of if you are using 80 track drive(s), please ask for a specially made utility disc (cost=£5.00).
The DFS+STLDISC has 3 extra disk commands:
*VERIFY (0 or 1): will check for CRC bytes. The default drive number is the current drive. The silicon disk has its own method of generation and verification of CRC bytes. It consists of exclusive-ORing all bytes in every silicon sector and the result is saved in its own private working space (from AEOO to BFFF, SWR8).
Although the silicon disc is very reliable and much less sensitive to power glitches than the computer's own RAM, this mechanism is automatically used to guarantee data integrity in any disk operation.
*DCOPY 0 1 or *DCOPY (1 0): will format an unformatted disk, then copy the whole contents of one disk to another. If the disk is already formatted it will only perform a *COPY*. *thus protecting non relevant files from being deleted.
If no drive number is supplied, *DCOPY will copy from the silicon drive to the physical drive (1 0). *DCOPY is at least twice as fast as the disk command *COPY 1 0*. *and performs *COMPACT (destination drive) at the same time.
*FORM40 (0 or 1): this is a built in format utility and should be used with care as you may wipe out precious software or data. The default drive number is the current drive.
Please WRITE-PROTECT your disks as there is no warning given with *FORMAT or *DCOPY.
Among the most striking features of the silicon drive, you will notice the speed of any disk operation, especially during BPUT and BGET, LOAD, SAVE, COMPACT, BACKUP, COPY, etc. . . .
Quietness and smoothness are other features to which you will very quickly become addicted. No more disk swappings, no need to *ENABLE and as !BOOT files can be initiated from any drive, most spectacular demonstrations of the capabilities of your computer regarding high res graphics or variety of languages can be achieved using the silicon drive. For example, if you load a 16K program from silicon disk, it is virtually impossible to move your finger before the cursor comes back! or load TWO 20K highest res pictures in a SECOND! Among possible applications are analog signal sampling and store, 3D plotting, CAD (we can supply 1MB silicon disk on request).
The average file transfer speed is 40K bytes/sec, around 15 times the speed of floppy and even more if the motor is allowed to stop between accesses. A 100k floppy can be copied in 15 seconds using *BACKUP, fast and easy disk duplication can be made using repeatedly *DCOPY etc. The silicon disc encourages systematic and modular programming as disc accesses become completely transparent, effortless and even faster than slicing a string variable in certain circumstances.
The nicest feature is probably the simplicity and reliability of the entire system. Just CHAIN "STLDISK" in the morning. Work all day and do a *DCOPY to end a day in the fast lane! We look forward to hearing from you and your own experience of the Silicon Disk!